CMMI® Appraisal Implementation Trends – Where are Appraisals Headed?

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Topics

- What kind of method is SCAMPI?
- What kind of issues are happening in the field?
- What are some trends in the industry?
- What are some lessons learned implementing CMMI based appraisals?
- Where is it all headed?

- *This presentation is updated based on material presented at the 2003 STC Conference.*

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What Kind of Method is SCAMPI V1.1 Anyway?

- Process Improvement, or Audit…?
  - The benchmark application is much more focused on validating achievement than identifying opportunities.
- Are audits “bad?”
  - If audits are intrinsically flawed, why do so many industries need and require them?
  - The purpose is sound – validate where you are at, in an independent and objective manner.
  - Audits don’t *have* to mean “excessive cost, highly intrusive, low value add”….
  - If the word connotes negative perceptions in your environment…don’t use the word! (i.e., don’t throw out the baby with the bathwater….)

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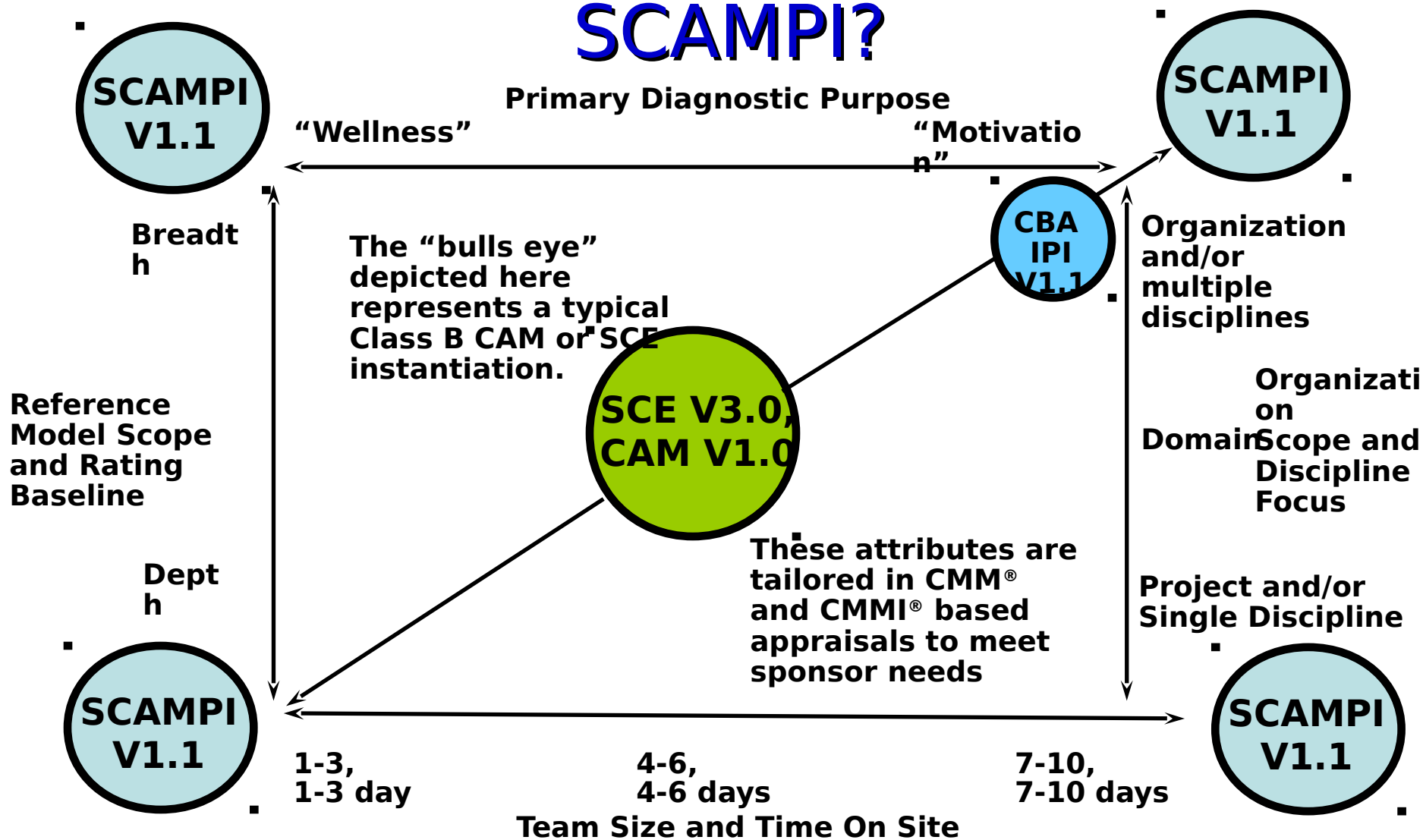
Appraisal Tool Kit – Where's SCAMPI?


SCAMPI V1.1
Primary Diagnostic Purpose
"Wellness"
"Motivation"
SCAMPI V1.1
Breadth
The "bulls eye" depicted here represents a typical Class B CAM or SCE instantiation.
CBA IPI V1.1
Organization and/or multiple disciplines
Reference Model Scope and Rating Baseline
SCE V3.0, CAM V1.0
Organization Domain Scope and Discipline Focus
Depth
These attributes are tailored in CMM® and CMMI® based appraisals to meet sponsor needs
Project and/or Single Discipline
SCAMPI V1.1
SCAMPI V1.1
1-3, 1-3 day
4-6, 4-6 days
7-10, 7-10 days
Team Size and Time On Site

Slide adapted from SCE V3.0 Evaluator and CAM V1.0 Appraiser Tra

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Some Key SCAMPI V1.1 Differences

- Discovery versus Verification means, “you prove it to the team.”
- Full Coverage means Full Coverage - the organizational scope equivalent of the “Full Monty.”
- Readiness reviews mean, “Are you ready?”

- Can these changes effect your rating? Yes
  - Changes in sponsor perspective
  - Perceptions of changing “the bar”
  - Differences in model interpretations
  - Focus on validating achievement vs. identifying improvement opportunities

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Some Issues with Integrated Improvement

Slide adapted from pdb INCOSE 2000 presentation

- Larger scope…
  - adds complexity, which leads to longer deployment and increased chances of losing focus
- More targets…
  - leads to increased interfaces…meaning more intergroup communication…leading to more points of "failure"
- Different disciplines included…
  - adds to cultural and legacy complexity and issues
- Greater drive for commonality…
  - leads to issues in the standard process level of abstraction
- Different disciplines exhibit differing levels of process maturity…
  - leading to different improvement needs
- Different disciplines exhibit different improvement maturity…
  - leading to varying readiness for improvement tasks

- **With this profile, who *expected* appraisals would be *easier*…?**

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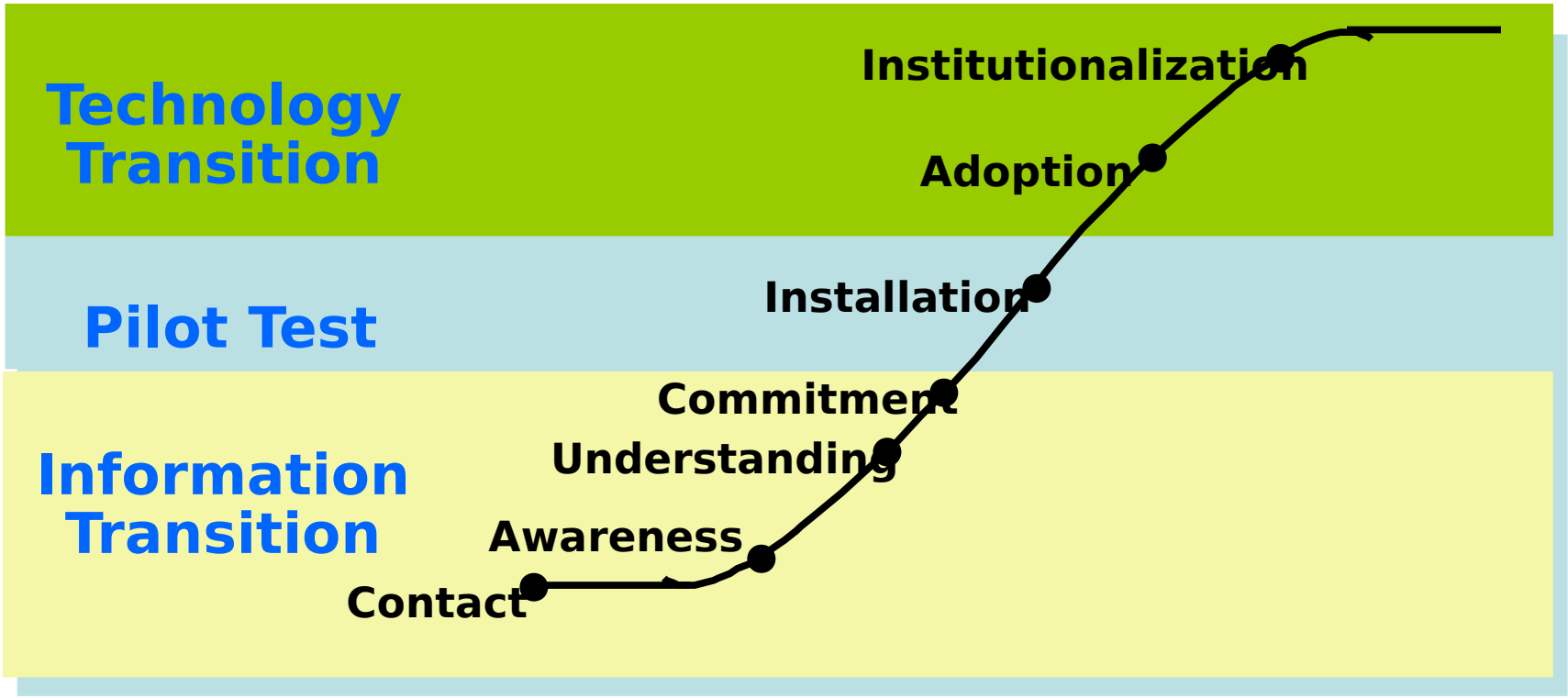
Organizations Exhibit Differing Adoption Rates Between Disciplines



FACT/ISSUE: All units within an organization are not likely to be at the sam on the adoption curve relative to reference model use, process improvem experience, and process maturity.

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Who *is* SCAMPI V1.1 Targeted For?

- What have higher maturity organizations been looking for in appraisal use?
  - increase rigor in data collection and validation
  - increase objectivity in the results
  - facilitate inter-office comparisons
  - assurance that customer requirements are met
  - mechanisms to integrate appraisal types
  - reduce overall process improvement costs

- ***Sounds like a SCAMPI V1.1 scenario, doesn't it? But isn't SCAMPI for everybody?***

Slide adapted from pdb presentations to UC CoSPI 1/97

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Appraisal Usage Trends

- "Merging" assessment and evaluation applications – "appraisals."
- Internationalization of process improvement efforts.
- Leveraging use of multiple reference models.
- Teaming of customers and suppliers in process improvement.
- *Requiring process maturity in bidding activities.*
- *Driving process improvement requirements down to the subcontractor level.*
- *Independent appraisals.*
- *Outsourcing parts of the improvement program effort.*

(trend chart modified from 4/94 CBA Users Workshop)

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Trends – Independent Appraisals

- Focused process management and control.
  - better risk identification and management.
  - objective perspective of status and progress.
- Professional conduct
  - reliable results in a more efficient delivery.
  - results may be perceived as more credible by end customers.
- Cost effective alternative to internal capacity and capability.

Slide adapted from pdb INCOSE 2000 presenta

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Lessons Learned in Method Usage

- Model integration and scope expansion increases the need for experienced team members and automated tooling.
- Experience in conducting appraisals is an invaluable asset.
- A team with experience in the legacy discipline models will improve the appraisal conduct.
- Time (i.e., cost) is a significant constraint that is a conflicting requirement with increasing the rigor and robustness of the method technically.

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SCAMPI Tailoring and Variations

- Some key SCAMPI tailoring and variations from the standard process commonly used in the recent past
  - more time allocated to the entire event (if attempting full coverage and ratings and multi-discipline events)
  - more time allocated to designing appropriate interview sessions (size, scope, etc.)
  - organization preparation starts sooner – more effort on site
  - team selection and composition critical
  - specialized training needed
  - longer, integrated organization in-brief needed
  - need for automated tools increased
  - need for different approaches to recording data

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Key Decision Making Parameters

Method > Attribute	CBA IPI V1.1	SCE V3.0 or CAM V1.0	SCAMPI V1.1
Cost	More costly due to distribution arrangements Less external cost due to internal resource usage	Less life cycle costs due to • tailoring options, • distribution arrangements, and • multiple uses	Most costly due to • model scope • appraisal complexity, and • more training
Schedule	Highly disruptive (due to organization focus)	Disruptive on appraised entity (due to sampling approach)	Highly disruptive
Performance	Least rigorous (as documented)	Rigorous, Conservative, Flexible	Most Rigorous, Highest confidence (as documented)

Distribution and Qualification

Parameter	CBA IPI V1.1	SCE V3.0	SCAMPI V1.1
Methodology Distribution	Public	Public	Public
Training Distribution	Authorized Lead Assessors	Licensed Vendors	Licensed Vendors with Authorized Lead Appraisers
Qualification	Lead Assessor Program	Lead Evaluator Program, Contracts	Lead Appraiser Program, Contracts
Licensing	No	Yes	Yes
Authorization	Yes, via training in Assessor Program	Yes, via training in Evaluator Program	Yes, via training in Appraiser Program
Certification of People	No, implicit in Assessor Program	No, implicit in Evaluator Program	No, implicit in Appraiser Program
Certification of Results	No	Not formally – but….	No – but….

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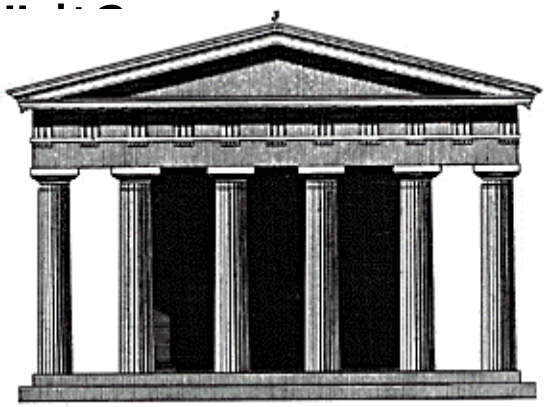
Can We "Certify" and Reuse Results?

- Infrastructure building – who "owns" it?
  - overall sponsorship
  - certifying the appraisal team members
  - creating and maintaining the repository
- Who are the "certifying" bodies/age
- What data should be in the repository?
- How long is the data valid – reappraisal?
- What is the appropriate team composition?
- How are certification events funded?



- *Trends are definitely moving in this direction.*

Slide adapted from pdb presentations to UC CoSPI 1/97

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Some Curious Changes

- With the CMM Appraisal Framework (CAF), there was a formal body and process for method developers to submit and receive approval of CAF compliance.
- With the Appraisal Requirements for CMMI (ARC), there is no such process, despite requests and actions items related to it. Why?
- Premise: Dictating a common benchmarking appraisal method and integrated model may be wise decisions for the U.S. DoD, but is it really wise for the rest of the world?

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Examples of Appraisal "Families"

- Internal Improvement — self improvement
- Acquisition — selecting suppliers [supplier selection]
- Teaming or Joint Improvement — customers and suppliers together [process monitoring]
- Third Party — certification [benchmarking]

- ***SCAMPI V1.1 was explicitly redesigned to meet the last application area***
  - ***without additional training and significant tailoring guidance, the SCAMPI V1.1 product line doesn't currently support the needs of the others well.***

Slide adapted from SCE V3.0 training

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Why Do Organizations Chase Levels Anyway?

- Results
  - Maintaining or increasing “win” rates in declining environments
  - Adding business explicitly based on process expertise
  - Receiving customer awards
  - Validating performance by customer teams
  - Generating significant “word of mouth” peer credibility

- ***The desire for the credential will not go away – so it must be dealt with.***
- ***Just don’t forget about the other applications that make up 90% of the other instantiations of CMMI based appraisals….***

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A Funny Thing Happened….

- Some fundamental issues underlying the stated need to move legacy methods to a more robust and integrated method (SCAMPI)
  - Stories of widely varying implementation approaches
  - Stories of varying maturity outcomes from different teams
  - Stories of widely varying model interpretations
  - Stories of differences in need between low and high maturity units
- Current stories…
  - Stories of widely varying implementation approaches
  - Stories of varying maturity outcomes from different teams
  - Stories of widely varying model interpretations
  - Stories of differences in need between low and high maturity
- *And by the way, these were the same stories in 1993 that lead to CBA IPI and SCE V3.0 in 1994 and 1995. What is the message?*

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CMMI Design Goals and Benefits – How Close Are We?

- Design Goals
  - Integrate the source models, eliminate inconsistencies, reduce duplication ***[kind of]***
  - Reduce the cost of implementing model-based process improvement ***[not yet]***
  - Be sensitive to impact on legacy efforts ***[jury's out]***
- Benefits
  - Efficient, effective assessment and improvement across multiple process disciplines ***[efficient and effective in question]***
  - Reduced training and assessment costs ***[not really]***
  - A common, integrated vision of improvement for all elements of an organization ***[yeah, that is happening]***
  - Integration of systems engineering and software environments for additional productivity & quality gains ***[that is the goal]***

Slide adapted from Rassa/Phillips
March 2001 presentation to OSD

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Challenges for CMMI V1.1 and SCAMPI V1.1

- Technical issues - These needs often conflict with one another….
  - Stability
  - Usability
  - Evolvability
- Implementing technical changes increases the likelihood of issues in the people dimension (appraisers). The “cat is out of the bag….”
- Making the method and model work effectively and efficiently in environments that are not similar to the one they were originally designed for (e.g., single discipline, small organizations, non-system builders).
- Model interpretation issues even bigger today than in prior models.
- ***Who is making necessary improvements to help meet these important challenges? Where are the inputs coming from?***
- ***Can the method reasonably be updated to account for all of the non-benchmarking applications? Should it?***

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Appraisal Technology – An Old Vision

Key Appraisal System Features	circa 4/94	circa 6/96	circa 1998	circa 2001
Standardization	none	appraisal results database - software	database includes systems results	CMM based methods the norm, used for all CMMs
Consistency and Commonality	based on individuals	routine teaming of customers and suppliers in SPI	routine SEI style appraisals done in commercial and international markets	assessment and evaluation comparable data
Interoperability	limited	common assets used in CMM Based Appraisal methods	common assets used for related reference models	results comparable across companies, across methods
Model-Based	partial on S/W CMM, multiple models	appraisal integration of S/W, Systems, CMMSE, CMMBIN 6/96	appraisal integration of S/W, Acquisition, People CMMs	model and method integration

Style adapted from pdc presentations to SEPG 94 and DC

Summary

- Good news:
  - The SCAMPI V1.1 method is more robust than prior methods…if implemented appropriately
  - SCAMPI V1.1 does meet its intended purpose
  - Automated tooling that supports increasing the efficiency and effectiveness of CMMI-based appraisals exists

- Work still needed:
  - SCAMPI method
    - Extensions to the method are required
    - Application specific guidance and training modules are needed.
    - Vastly improved tailoring guidance is required
    - Techniques to make the overall process more time efficient
  - Stronger quality assurance on the front end of the Appraiser system
  - A body to verify and validate ARC compliance and method technical quality for alternate methods

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